**What is Claimed is:**

1. A process for the low temperature, non-incineration decontamination of contaminated materials containing hazardous agents, the process comprising:

(a) contacting the contaminated materials and the hazardous agents with steam at substantially ambient pressure in a substantially dry first heated vessel for a period of at least about 15 minutes, the steam being at a temperature of at least about 560°C, whereby essentially all of the hazardous agents are removed from the contaminated materials;

(b) removing a first gaseous discharge stream containing hazardous agents from the first heated vessel, the first gaseous discharge stream comprising a condensible moiety and a non-condensible moiety;

(c) heating the first gaseous discharge stream at substantially ambient pressure in a substantially dry second vessel to at least about 500°C and maintaining the first gaseous discharge stream in the second vessel of at least about 500°C for a period of at least about one second in an atmosphere containing sufficient steam such that, such that at least about 99 weight percent of the hazardous agents within the first gaseous discharge stream are converted to non-hazardous agents;

(d) removing a second gaseous discharge stream containing a reduced concentration of hazardous agents from the second vessel, the second gaseous discharge stream comprising a condensible moiety and a non-condensible moiety; and

(e) catalytically treating the second gaseous discharge stream in the presence of oxygen so that the concentration of hazardous agents within the non-condensible moiety of the second gaseous discharge stream is reduced to less than about 1.0 $mg/m^3$ at standard temperature and pressure.

2. The process of claim 1 wherein the contacting of the contaminated materials and hazardous agents with steam in step (a) is carried out using steam at a temperature between about 560°C and about 750°C.

3. The process of claim 1 wherein the contacting of the contaminated materials and hazardous agents with steam in step (a) is carried out for a period of between about 15 minutes and about 4 hours.

4. The process of claim 1 wherein the contacting of the contaminated materials and hazardous agents with steam in step (a) is carried out for a period of between about 15 minutes and about 120 minutes.

5. The process of claim 1 wherein the maintaining of the first gaseous discharge stream at a temperature greater than about 500°C in step (c) is carried out at a temperature between about 500°C and about 700°C.

6. The process of claim 1 wherein the maintaining of the first gaseous discharge stream at a temperature of at least about 500°C in step (c) is carried out for a period between about 1 second and about 10 seconds.

7. The process of claim 1 wherein the maintaining of the first gaseous discharge stream at a temperature of at least about 500°C in step (c) is carried out for a period between about 1 second and about 5 seconds.

8. The process of claim 1 wherein the heating and maintaining of the first gaseous discharge stream at a temperature of at least about 500°C in step (c) converts at least about 99.99% of the chemical warfare agents within the first gaseous discharge stream to non-chemical warfare agents.

9. A process for the low temperature, non-incineration decontamination of chemical weapon components containing chemical warfare agents, the process comprising:

(a) contacting the chemical weapon components and the chemical warfare agents with steam at substantially ambient pressure in a substantially dry first heated vessel for a period of at least about 15 minutes, the steam being at a

temperature of at least about 560°C, whereby essentially all of the chemical warfare agents are removed from the chemical weapon components;

(b) removing a first gaseous discharge stream containing chemical warfare agents from the first heated vessel, the first gaseous discharge stream comprising a condensible moiety and a non-condensible moiety;

(c) heating the first gaseous discharge stream at substantially ambient pressure in a substantially dry second vessel to at least about 500°C and maintaining the first gaseous discharge stream in the second vessel of at least about 500°C for a period of at least about one second in an atmosphere containing sufficient steam, such that whereby at least about 99 weight percent of the chemical warfare agents within the first gaseous discharge stream are converted to non-chemical warfare agents;

(d) removing a second gaseous discharge stream containing a reduced concentration of chemical warfare agents from the second vessel, the second gaseous discharge stream comprising a condensible moiety and a non-condensible moiety; and

(e) catalytically treating the second gaseous discharge stream in the presence of oxygen so that the concentration of hazardous agents within the non-condensible moiety of the second gaseous discharge stream is reduced to less than about 1.0 mg/m$^3$ at standard temperature and pressure.

10. The process of claim 9 wherein the contacting of the chemical weapon components and chemical warfare agents with steam in step (a) is carried out using steam at a temperature between about 560°C and about 750°C.

11. The process of claim 9 wherein the contacting of the chemical weapon components and chemical warfare agents with steam in step (a) is carried out for a period of between about 15 minutes and about 4 hours.

12. The process of claim 9 wherein the contacting of the chemical weapon components and chemical warfare agents with steam in step (a) is carried out for a period of between about 15 minutes and about 120 minutes.

13. The process of claim 9 wherein the maintaining of the first gaseous discharge stream at a temperature greater than about 500°C in step (c) is carried out at a temperature between about 500°C and about 700°C.

14. The process of claim 9 wherein the maintaining of the first gaseous discharge stream at a temperature of at least about 500°C in step (c) is carried out for a period between about 1 second and about 10 seconds.

15. The process of claim 9 wherein the maintaining of the first gaseous discharge stream at a temperature of at least about 500°C in step (c) is carried out for a period between about 1 second and about 5 seconds.

16. The process of claim 9 wherein the heating and maintaining of the first gaseous discharge stream at a temperature of at least about 500°C in step (c) converts at least about 99.99% of the chemical warfare agents within the first gaseous discharge stream to non-chemical warfare agents.

17. A process for the low temperature, non-incineration decontamination of chemical weapon components containing chemical warfare agents, the process comprising:

(a) contacting the chemical weapon components and the chemical warfare agents with steam at substantially ambient pressure in a substantially dry first heated vessel for a period of between about 15 minutes and about 120 minutes, the steam being at a temperature of between about 560°C and about 750°C, whereby essentially all of the chemical warfare agents are removed from the chemical weapon components;

(b) removing a first gaseous discharge stream containing chemical warfare agents from the first heated vessel, the first gaseous discharge stream comprising a condensible moiety and a non-condensible moiety;

(c) heating the first gaseous discharge stream at substantially ambient pressure in a substantially dry second vessel to at least about 500°C and maintaining the first gaseous discharge stream in the second vessel at a temperature between about 500°C and about 700°C for a period of between about 1 second and about 5 seconds in an atmosphere containing sufficient steam, such that whereby at least about 99.99 wt. % of the chemical warfare agents within the first gaseous discharge stream are converted to non-chemical warfare agents;

(d) removing a second gaseous discharge stream containing a reduced concentration of chemical warfare agents from the second vessel, the second gaseous discharge stream comprising a condensible moiety and a non-condensible moiety; and

(e) catalytically treating the second gaseous discharge stream in the presence of oxygen so that the concentration of hazardous agents within the non-condensible moiety of the second gaseous discharge stream is reduced to less than about 1.0 $mg/m^3$ at standard temperature and pressure.

18. The process of claim 17 wherein the first vessel is an electrically heated vessel.

19. The process of claim 18 wherein the first vessel is heated by electrical induction.

20. The process of claim 9 wherein, prior to the contacting of the chemical weapon components and the chemical warfare agents with steam in step (a), the chemical weapon components are flushed with a liquid flushing agent in a flushing vessel, the flushing vessel comprising a liquid level of flushing agent and an internally disposed carousel for rotating a plurality of chemical weapon components into and out of flushing agent.

21. The process of claim 20 wherein the flushing vessel further comprises a plurality of spray nozzles for spraying flushing agent into the chemical weapon components.

22. The process of claim 21 wherein the spray nozzles include at least one spray nozzle disposed above the liquid level of the flushing agent within the flushing vessel and at least one spray nozzle disposed below the liquid level.

23. The process of claim 9 wherein, during the contacting of chemical weapon components and chemical warfare agents with steam in step (a), the first vessel contains a plurality of discrete chemical weapon component bundles, each bundle containing a plurality of chemical weapon components.

24. The process of claim 23 wherein each chemical weapon component bundle is contacted in step (a) with steam of at least about 560°C for at least two different and distinct periods of at least about 15 minutes each.

25. The process of claim 9 wherein the first vessel comprises a plurality of elongate racks, each elongate rack being sized and dimensioned to retain a plurality of chemical weapon components.

26. The process of claim 25 wherein the first vessel has a longitudinal axis and wherein the elongate racks are rotatable about the longitudinal axis.

27. The process of claim 9 wherein the contacting of chemical weapon components and chemical warfare agents with steam in step (a) is conducted using an auger disposed within the first vessel to move chemical weapon components from an inlet end of the first vessel to an outlet end of the first vessel.

28. The process of claim 27 wherein the auger comprises a plurality of adjustable blades.

29. The process of claim 28 wherein, during the contacting of the chemical weapon components and chemical warfare agents with steam in step (a), a filler material is mixed with the chemical weapon components within the first vessel.